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SATURDAY, NOVEMBER 29TH, 1856. (Stated Meeting.)

JAMES HENTHORN TODD, D.D., PRESIDENT,
in the Chair.

THE following Recommendation of the Council having been read by the Chairman, viz. :—

“That the first clause of the Recommendations respecting the rotation of the Council, adopted on the 30th November, 1854, be repealed, viz. :

“‘That it is expedient that one member of each Committee be removed in each year, in addition to any vacancies which may be caused by death, resignation, or non-attendance.’

“And that the following be substituted for it :—

“‘That it is expedient that one Member of each Committee be removed in each year, in case no vacancy should occur on that Committee by death, resignation, or non-attendance.’”

It was moved as an amendment by the Rev. Joseph A. Galbraith, and seconded by Frederick J. Sidney, LL.D., and—

RESOLVED,—That the Resolution proposed by the Council be referred back again to the Council, with the recommendation that the words “And the Vice-Presidents” be omitted from clause 2 of the Resolutions of Nov. 30, 1854,* with respect to the mode of electing the Council.

Rev. Samuel Haughton read a paper on some Experiments on the Poisonous Properties of Strychnine and Nicotine.

Mr. Haughton stated, that he was induced to make the experiments which he now brought under the notice of the Academy, by the consideration of the specific actions of strychnine and nicotine upon the muscular system, which appeared to be so opposite in their character as to lead him to

* See Proceedings, vol. vi. p. 133.

a conviction that they might prove to be mutually antidotes to each other's action. It is generally believed that strychnine exerts a specific action upon the lower or lumbar portion of the spinal column, exciting the muscular system (at least the voluntary muscles) into a state of tetanic contraction, and ultimately producing death indirectly by rendering respiration mechanically impossible, by virtue of the permanent contraction of the pectoral muscles, and not, as was once supposed, by its action upon the heart. It is also well known that the most powerful agent we possess for relaxing the action of the muscles is nicotine, whether administered in the form of tobacco smoke or infusion of the leaves. From these well-known facts, Mr. Haughton was led to believe that these powerful poisons might be used as antidotes to each other's action; and, with the view of testing this conjecture, he made the following experiments:—

First Experiment.—Nicotine.

A bath consisting of 5 ounces of water, holding dissolved 5 grains of nicotine, of 1012 specific gravity, was prepared, and in this mixture a frog was immersed; in 55 seconds the animal became narcotized, and apparently incapable of motion; but on being excited and stirred, it was evident that life was not extinct, and the pulsation of the heart did not cease until 23 minutes after immersion. The anterior extremities became paralyzed first, accompanied with a quivering of the forelegs, and then the hindlegs were drawn up so as to reduce the animal to the smallest possible compass. At the time of death, the belly and hindlegs became suffused with a pink tint, which was rapidly diffused, commencing at the thighs. After death the mouth remained closed, and the eye continued very brilliant and life-like.

Second Experiment.—Nicotine.

A solution of nicotine was formed, consisting of 5 grains of nicotine to 20 ounces of water; and a frog immersed as

before, leaving his head above the water ; in $3\frac{1}{2}$ minutes he became quite paralyzed as before, placing the forelegs upon his back with the palms upwards. Death finally ensued in 43 minutes, with the same appearances as those described in the first experiment.

Third Experiment.—Strychnine.

In this experiment 5 grains of pure strychnine were dissolved in a minimum of muriatic acid, and 5 ounces of water added. A frog was placed in the bath thus formed, with the following results:—Tetanic convulsions set in immediately upon his touching the liquid, and continued while life remained ; there was no sign of opisthotonos, but strongly marked emprosthotonos. The animal was quite dead in 4 minutes ; mouth open, and eye closed and death-like ; the whole body stretched out and bent forwards, the back being highly arched.

Fourth Experiment.—Strychnine.

A bath was made of 5 grains of strychnine and 20 ounces of water, and a frog placed in the solution, as before. The animal became speedily convulsed, and exhibited the same symptoms as in the former case ; but in this case death did not finally take place until after an interval of 55 minutes. The mouth was open, the eye closed and dead, and the body arched and bent forwards, as before.

Fifth Experiment.—Nicotine and Strychnine.

In this experiment, two baths were prepared ; one of 5 grains of strychnine to 5 ounces of water, and the other of 5 grains of nicotine to 5 ounces of water, and the two solutions carefully mixed together. A frog was now introduced, and remained apparently without inconvenience for 19 minutes, when the strychnine began to operate, and the first tetanic convulsion appeared ; the usual appearance of strychnine poisoning continued, but with less violence than in the former experiments ; after 47 minutes the animal was removed from

the bath, and washed with cold water; he lived afterwards for upwards of 24 hours, exhibiting at intervals tetanic convulsions.

Sixth Experiment.—Nicotine and Strychnine.

Another frog was placed in a mixed bath of nicotine and strychnine of the same strength as that last described, and removed after an interval of 10 minutes. After removal, in 32 minutes, the first symptom of emprosthotonos appeared, and the convulsions continued for many hours; but the animal ultimately recovered completely, and is still in the enjoyment of health and life, after a lapse of many days.

The last two experiments appeared to Mr. Haughton conclusive as to the action of nicotine in retarding, and, in certain cases, completely counteracting the effects of strychnine. In the fifth experiment, a frog had lived for 47 minutes in a mixture of two solutions, of which one would have destroyed life in 4 minutes, and the other would have produced paralysis in 1 minute, and destroyed life in 23 minutes; and yet, in the mixture, the animal had lived for 47 minutes, and afterwards for 24 hours.

In the sixth experiment, the frog immersed in a similar mixture of the poisons for 10 minutes had ultimately recovered; the effect of the strychnine being completely obviated by the action of the nicotine.

Mr. Haughton considered that these facts which had come under his notice, gave rise to much interesting speculation, into which, however, he had no desire to enter, as he preferred leaving such topics to those who were more immediately concerned in them; and he expressed a hope that further inquiries would be instituted into the action of strychnine and nicotine upon some of the warm-blooded animals, as he believed that in nicotine, which was always easily procurable in the form of tobacco-leaf infusion, would be found a valuable antidote in at least some cases of strychnine poisoning, whether intentional or accidental.

The Secretary read the following extracts from a letter from the Rev. T. H. Porter, accompanying the donation of a very large wooden vessel to the Museum of the Academy:—"It was found some months since, at a considerable depth in a peat bog at Gortagowan, in this parish (Desartcreat, county of Tyrone), the same bog in which three former wooden articles, which I had the pleasure of sending up to the Museum, were found. It lay bottom uppermost, and was much shattered by the diggers in taking it out. But it is remarkable that it had been split in different places before it was submerged; as is plain from the several slips of hard wood, with holes for pegs, found with it; one of which is now attached where it was originally put on. The poor owners must have had it a long time in use, and must have valued it highly. A long slender pole, apparently of willow, or some other pliable wood, was found near it, but much damaged. Within it was a quantity of dark brown stuff, of which I have a sample; it seems to be merely the finer parts of the peat, filtered in by the water."